

LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA6 | South Ruislip to Ickenham

Survey reports (CH-004-006)

Cultural heritage

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Department
for Transport

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High Speed Two (HS2) Limited,
Eland House,
Bressenden Place,
London SW1E 5DU

Details of how to obtain further copies are available from HS2 Ltd.

Telephone: 020 7944 4908

General email enquiries: HS2enquiries@hs2.org.uk

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1 Introduction

1.1 Structure of the cultural heritage appendices

- 1.1.1 The cultural heritage appendices for the South Ruislip to Ickenham community forum area (CFA6) comprise:
- baseline reports (Appendix CH-001-006);
 - a gazetteer of heritage assets (Appendix CH-002-006);
 - an impact assessment (Appendix CH-003-006); and
 - survey reports (this appendix).

- 1.1.2 Maps referred to throughout the cultural heritage appendices are contained in the Volume 5, Cultural Heritage Map Book.

1.2 Surveys undertaken

- 1.2.1 This appendix contains the results of a series of archaeological surveys. These surveys comprised:
- a fully-integrated remote sensing survey incorporating light detection and ranging (LiDAR) and aerial photographic analysis of the majority of the Proposed Scheme; and
 - a geophysical survey at one location along the route, encompassing 6.6ha.

1.3 Surveys proposed but not undertaken

- 1.3.1 Access was gained to all of the proposed survey sites in the study area.

2 Remote sensing survey report

2.1 Introduction

- 2.1.1 This report outlines the results of the archaeological remote sensing survey in CFA6. This was an archaeological survey involving the systematic analysis, interpretation, mapping and recording of archaeological sites from aerial photographs and LiDAR.
- 2.1.2 The aim of the survey was to accurately map and record the form and extent of archaeological features visible as cropmarks, soilmarks, earthworks or structures on a range of different remote-sensed imagery for the study area, in order to inform the baseline assessment of the cultural heritage resource.
- 2.1.3 The study area has not been covered by an English Heritage national mapping programme project. The Thames Valley national mapping programme project area¹ falls to the south, and the area covered by the Hertfordshire national mapping programme project² lies to the north,

therefore there is no existing systematic survey of archaeological features visible on remote-sensed sources for CFA6.

The study area

- 2.1.4 The study area for this remote sensing survey covered the north-western end of CFA6, between High Road, Ickenham, and the start of the Colne Valley community forum area (CFA7) at Harvil Road. The study area is entirely within the region of the Greater London Authority (GLA).
- 2.1.5 The study area generally comprised a 700m-wide strip along the Proposed Scheme (350m either side of the Proposed Scheme centre line). This provided a buffer sufficient to offer contextual information for recorded sites. Where the Proposed Scheme boundary extended beyond the edge of the 700m-wide strip, the study area was expanded to include this extent.³
- 2.1.6 In total, the CFA6 archaeological remote sensing survey covered an area of 1.8km².

2.2 Methodology

- 2.2.1 In order to provide consistency with other similar datasets (namely English Heritage national mapping programme mapping), the archaeological remote sensing survey was carried out in broad accordance with the current version of the English Heritage national mapping programme standards⁴. The interpretations applied to identified features are consistent with the preferred terms within the English Heritage Monument Type Thesaurus.⁵

Sources: modern aerial photographs

- 2.2.2 High resolution (12.5cm) vertical aerial orthophotography taken specifically for the purposes of the HS2 project was made available for this survey. This imagery was captured during 2012. It generally consists of a 700m-wide strip centred on the proposed route, although it is slightly wider in some areas. It was viewed digitally within a geographical information system (GIS) program. The level of accuracy of the orthorectification is such that features mapped from this source should be within 150mm of true ground position.
- 2.2.3 Pre-existing vertical aerial orthophotography dating from the 1990s and 2000s was also obtained under the Pan-Government Agreement. The resolution is 250mm. The level of accuracy of the orthorectification is such that features mapped from this source should be within 1.5m of true ground position.⁶ This vertical imagery was also viewed on-screen within GIS.

Sources: historic aerial photographs

- 2.2.4 Searches were made for readily-available historic vertical and oblique aerial photographs held by the English Heritage Archive (formerly the National Monuments Record) and the

¹ Fenner, V.E.P., (1994), The Thames Valley Project: a report for the National Mapping Programme, RCHME Aerial Survey Report Series.

² Fenner, V.E.P., (1992), Crop Marks in Hertfordshire: a report for the National Mapping Programme, RCHME internal document.

³ The boundaries used were part of the B4 data issued in April 2013.

⁴ Winton, H., (2012), *Standards for National Mapping Programme projects, Version 0.1*, Draft, English Heritage, Aerial Investigation and Mapping, Typescript document.

⁵ English Heritage; NMR Monument Type Thesaurus; http://thesaurus.englishheritage.org.uk/thesaurus.asp?thes_no=1; Accessed: August 2012–June 2013.

⁶ GeoStore; Aerial Photography RGB Product; <http://www.geostore.com/geostore4/WebStore?xml=geostore4/xml/productsAPRGB.xml>; Accessed: August 2013.

- Cambridge University Unit for Landscape Modelling. The latter is also referred to as the Cambridge University Collection of Aerial Photography.
- 2.2.5 The 219 historic vertical aerial photographs of the CFA6 study area in the English Heritage Archive (see Table 5) were taken for non-archaeological purposes between 1940 and 1998, by organisations such as the Royal Air Force (RAF) and the Ordnance Survey (OS). These photographs, however, often captured sites of historic interest incidentally, especially those shots taken in the first half of the 20th century before archaeological remains may have been damaged or destroyed by the intensification of arable farming.
- 2.2.6 The 38 historic oblique aerial photographs of the CFA6 study area in the English Heritage Archive (see Table 6) were taken between 1917 and 2010 and usually targeted known sites of architectural or archaeological interest. They were typically taken at a much larger scale than the 'blanket' vertical aerial photography, and were often timed to capture images of archaeological sites when they were at their most visible, i.e. when dry ground conditions favoured the development of clear cropmarks, or when low winter sun would reveal subtle earthworks.
- 2.2.7 Although the Cambridge University Collection of Aerial Photography catalogue was searched for aerial photographs of CFA6, there was no coverage of this particular area.
- 2.2.8 All aerial photographs in the English Heritage Archive which fell within the study area were viewed in person and examined stereoscopically and under magnification where applicable. Copies were obtained where potential archaeological features were identified and the relevant photographs were considered to be of use either for transcription or for reference purposes.

Sources: LiDAR imagery

- 2.2.9 High resolution LiDAR⁷ data acquired specifically for the purposes of the HS2 project was made available for this survey. This data was captured in 2012. It generally consists of a 700m-wide strip centred on the Proposed Scheme, although it is slightly wider in some areas.
- 2.2.10 The resolution of the data supplied was 20cm. The level of accuracy of the orthorectification was such that features mapped from this source should be within 15cm of true ground position. The raster digital elevation model was viewed directly within GIS. The digital elevation model is LiDAR data that has been processed to provide a representation of the ground surface without objects such as vegetation or buildings. This means that archaeological earthworks can be revealed on the LiDAR imagery, even if they lie beneath areas of woodland.⁸

Sources: hyperspectral imagery

- 2.2.11 Hyperspectral imagery was not available for CFA6.

Sources: historic environment record data

- 2.2.12 Data from the GLA historic environment record (HER) were used as a reference to aid interpretation of features visible on remote sensed imagery, either through a pre-existing identification of a visible feature, or by providing information that could help characterise the likely cultural heritage resource of the area.
- 2.2.13 The HER data was supplied as points, lines and polygons, with identifying attribute data attached. Full monument record reports were also supplied as a Portable Document Format document. The data supplied covered the entirety of the GLA HER area, creating an ample buffer to provide contextual information for any archaeological sites of interest within the boundary of the remote sensing study area.

Sources: National record of the historic environment data

- 2.2.14 Monument data from the national record of the historic environment, held by English Heritage, were used as a reference to aid interpretation of features visible on remote sensed imagery, either through a pre-existing identification of a visible feature, or by providing information that could help characterise the likely cultural heritage resource of the area.
- 2.2.15 These data were supplied as points, lines and polygons with identifying attribute data attached. Full monument record reports were also supplied as a Portable Document Format document. The data covered a 10km-wide strip (5km each side of the Proposed Scheme centre line), thereby providing an ample buffer beyond the boundary of the remote sensing study area.

Sources: cartographic sources

- 2.2.16 Historic OS mapping was supplied by HS2 Ltd. The map tiles had been geo-referenced and were viewed digitally in GIS. Epochs 1–4 of the 1:2500 scale County Series maps, which typically date from 1898 onwards, were used as a reference to aid interpretation of features visible on the remote sensed imagery.
- 2.2.17 In general, where features such as field boundaries, trackways, extractive pits or ponds were marked on a historic OS map, they were not mapped and recorded as part of this survey. This is because the objective of this project was to add to the known record, not duplicate it. Where the full extent or form of a feature was not recorded in its entirety on the historic maps, it was included in the transcription for this project.

Interpretation, rectification and mapping

- 2.2.18 All vertical and oblique images from the sources identified above were systematically examined for any archaeological features visible as cropmarks, soilmarks, earthworks or structures. In accordance with best practice for remote sensing surveys, all available sources for each field or land parcel were viewed in conjunction in order to enable the most accurate interpretation possible.

⁷ Although it used to be written as 'LiDAR', this acronym has now been adopted into common English as 'lidar', in the same manner as 'radar' (RADAR: RADio Detection And Ranging). This is the way it appears in the Oxford English Dictionary, as well as in English Heritage publications and on their website.

⁸ This can sometimes depend upon the time of year that the LiDAR imagery was captured.

- 2.2.19

Where archaeological features were visible on the LiDAR or aerial orthophotography, a detailed transcription, including all visible elements of the site in question, was carried out in ArcMap 10.1.
- 2.2.20

Where additional sites, features or details were visible on the historic oblique or vertical aerial photographs from the English Heritage Archive, these images were rectified using the computer program Aerial 5.33 prior to their import into ArcMap for transcription.
- 2.2.21

Digital OS MasterMap 1:1250 base maps were used to establish control points (it should be noted that even when 1:1250 scale data is obtained, the scale of the mapping for rural areas is only in fact 1:2500⁹). Six or more control points were used for each photograph, with errors kept below 1m for each control point. This provided an accuracy of less than 1m to the base map for the rectified photographs.
- 2.2.22

A digital terrain model (DTM) in the form of 5m point data was used in order to further refine the accuracy of the rectifications. The DTM was supplied under the Pan-Government Agreement.
- 2.2.23

The OS advise that their 1:1250 scale MasterMap data has an accuracy of 0.5m root mean square error for urban areas, and 1.1m root mean square error for rural areas.¹⁰ Therefore, archaeological features transcribed from photographs rectified using this data will on average be accurate to within 1m–2m of their British national grid coordinates.
- 2.2.24

As noted above, in order to ensure consistency with other similar remote sensing datasets, this project was carried out in broad accordance with current national mapping programme standards and guidance. As such, the identified features were transcribed onto the standard national mapping programme drawing layers, using standard national mapping programme conventions¹¹ as detailed in Table 1.

Table 1: Layers used in GIS for digital transcription of archaeological features¹²

Layer name	Colour	Description
Bank	Red	Defines the outline of positive features such as boundary banks or windmill mounds. Thin banks, or those too diffuse to define accurately, are included on this layer as a single line.
Ditch	Green	Defines the outline of negative features such as boundary ditches or hollow ways. Thin ditches, or those too diffuse to define accurately, are included on this layer as a single line.
Large cut feature	Blue	Defines the outline of sizeable negative features such as quarries or extractive pits.
Levelled R&F outline or direction	Magenta	Defines the outline of a single block of ridge and furrow seen either as a cropmark, or an earthwork later known to have been levelled. An arrow within each single block indicates the direction of ploughing.
Extant R&F outline or direction	Cyan	Defines the outline of a single block of ridge and furrow seen as earthworks on the latest available remote sensed imagery. An arrow within each single block indicates the direction of ploughing.

⁹ Ordnance Survey; Products and Services FAQs: How accurate are your products?; <http://www.ordnancesurvey.co.uk/oswebsite/support/products-services.html>; Accessed: June 2013.

¹⁰ Ibid.

¹¹ Winton, (2012).

¹² Table 1 based on Winton, (2012) Section 7.5. P.31.

Layer name	Colour	Description
Extent of area	Grey	Defines the extent of large features such as the perimeters of WWII airfields and military camps.
T-hachure	Dark blue	Top of the 'T' defines the top of a slope or scarp edge such as a lynchet or house platform. Body of the 'T' indicates the length and direction of the slope.
Structure	Purple	Defines the extent of surviving buildings and structures such as individual WWII Nissen Huts and pillboxes. Thin structures such as walls or concrete paths are included in this layer as a single line.

- 2.2.25

Information relating to each of the transcribed features was recorded in the ArcMap attribute table. This included details such as the interpretation of each feature and the remote sensed source they were transcribed from, as well as the HER and national record of the historic environment numbers for the features if applicable. These results have been set out in Table 4: Exported GIS data for each transcribed feature, detailing the interpretation applied.
- 2.2.26

Table 2 and Table 3 show period range and evidence range abbreviations used. The evidence abbreviations identify the form in which a feature is visible on the remote sensed imagery.

Table 2: Period range abbreviations used in the GIS attribute data

Period	Abbreviation
Neolithic	N
Bronze Age	BA
Iron Age	IA
Roman	RO
Early medieval	EM
Medieval	MD
Post-medieval	PM
20th century	C20
World War II	WWII
Uncertain	UN

Table 3: Evidence abbreviations used in the GIS attribute data

Evidence	Abbreviation
Cropmark	C
Earthwork	E
Levelled earthwork	LE
Destroyed monument (i.e. quarried-away)	DM
Structure	S

2.2.27 The results of this remote sensing survey and transcription have been saved in the project ArcMap MXD and have been supplied to HS2 Ltd with all of the additional required metadata attached. The results have also been exported as Esri shapefiles for ease of import into other GIS programs where necessary in compiling the baseline survey.

2.3 Limitations

- 2.3.1 HER and national record of the historic environment data was up-to-date when it was obtained by HS2 Ltd in 2013 Any information added to these databases after that time will not have been available as a reference during the course of this survey.
- 2.3.2 In some areas, the 2012 LiDAR and aerial orthophotography did not extend to cover the latest revision of the Proposed Scheme.¹³
- 2.3.3 The Cambridge University Collection of Aerial Photography archives held no aerial photographs covering the survey area.
- 2.3.4 Hyperspectral imagery was not available for the survey area.
- 2.3.5 Where archaeological sites have been identified solely from remote sensed imagery, without confirmation from archaeological excavation or supporting evidence in the form of, for example find-spots or geophysics , it should be noted that the interpretation may be revised in the light of further investigation.
- 2.3.6 It should be stressed that the absence of an archaeological feature on remote sensed imagery does not confirm its absence in the ground, as visibility from the air is sometimes dependent upon a complex combination of factors. These include:
- unsuitable conditions at the time of image capture (such as lighting, ground moisture content and crops or other ground cover);
 - variable quality of photography;
 - underlying features being masked by alluvial build-up; and
 - areas where archaeological features either do not survive or have never existed.
- 2.3.7 A large proportion of the study area is taken up by housing, even on the early historic aerial photographs. As such, the area suitable for remote sensed survey was limited. A few small patches of undeveloped ground remain, however, amongst the built-up area to the south of the existing railway and golf course.
- 2.3.8 During the survey, 'steps' of approximately 2m were noted at several points in the purpose-flown 2012 vertical orthophotography, where adjacent image tiles had been joined to provide continuous coverage of the Proposed Scheme.
- 2.3.9 Archaeological features were not mapped beyond the boundary of the remote sensing survey study area, as the cumulative effect of this along the entire length of the Proposed Scheme would have resulted in a significant increase in the study area. Where archaeological cropmarks, earthworks, soilmarks or structures continued beyond the study area boundary, this was noted in the attribute data of the mapped feature.

2.3.10 Consultation is on-going with GLHER regarding any possible historic oblique and vertical aerial photographs held in their archive though none were available.

2.4 Assumptions

2.4.1 Information on the positional accuracy of the hyperspectral imagery has not been supplied. As such, it is assumed that the accuracy of the orthorectification of this source is at least as good that of the Aerial 5.33 program outlined in Section 2.2.18 of this report – i.e. transcribed features will be accurate to within 1m–2m of true ground position. However, see the note in Section 2.3 of this report regarding the 2m 'step' observed in some locations.

2.5 Results: description

- 2.5.1 The primary output of the archaeological remote sensing survey of CFA6 was the detailed digital transcription of each identified potential archaeological feature. Information pertaining to the interpretation of these features is contained within the attribute data of every line and polygon drawn in GIS.
- 2.5.2 Table 4 itemises in detail the results of the CFA6 survey. These details originate from the GIS attribute data. The results should be read in conjunction with Figures CH004.06.01 and CH004.06.02 of this report.
- 2.5.3 Where a single mapped feature has generated two lines of identical attribute data,¹⁴ the duplicate line has been removed from Table 4. Where the transcription of a site or feature consists of several lines or polygons which may have been visible on different sources, or in a different form (i.e. where different elements of the site are visible as both cropmarks and earthworks), the differing lines of the attribute data table have been retained in order to reflect these variations.
- 2.5.4 The aerial survey ID is the unique identification applied to each site or feature transcribed during this project. It was not considered sufficient to use the automatically generated 'feature ID' within GIS, as this would result in a site which consisted of several different features represented by different lines and polygons having several different identifying numbers. The aerial survey ID was also used to group features, such as several adjacent blocks of ridge and furrow. For example, feature F05 consists of seven individual mapped areas of ridge and furrow which have been recorded as one feature. This is consistent with the approach taken by English Heritage on national mapping programme projects.¹⁵ The aerial survey ID is prefixed with a different sequential letter for each CFA. For CFA6 it is the letter 'F'.
- 2.5.5 The national record of the historic environment and HER columns detail the relevant monument numbers for these authorities, where such numbers exist for transcribed features. The HER reference quoted is the 'Pref Ref' rather than the monument number.
- 2.5.6 The period abbreviations used are set out in Table 2.

¹³ The boundaries used were part of the B4 data issued in April 2013.

¹⁴ Such as a block of ridge and furrow, which contains this information within both the polygon that defines its extent and the line indicating the direction of ploughing.
¹⁵ Winton, (2012).

- 2.5.7 As noted in Section 2.2.1 of this report, the interpretation types (given in the Types column) comply with the preferred terms within the English Heritage Monument Type Thesaurus¹⁶ in order to achieve consistency with other similar transcribed datasets.
- 2.5.8 The evidence abbreviations refer to the physical nature of the recorded features. These abbreviations are set out in Table 3.
- 2.5.9 The remote sensed imagery used to transcribe each individual feature is detailed in the Source column.
- 2.5.10 The description column is intended as a brief interpretation only, outlining the main features or points of note.
- 2.5.11 The full attribute table attached to every line and polygon transcribed as part of this survey contains additional columns not displayed in Table 4, such as the date the feature was transcribed and the initials of the member of staff responsible, etc.

¹⁶ English Heritage, *NMR Monument Type Thesaurus*.

Table 4: Exported GIS data for each transcribed feature, detailing the interpretation applied

Aerial survey ID	National record of the historic environment reference	HER reference	Period	Type	Evidence	Source	Description
F01			MD/PM	Ridge and furrow	E	HS2 LiDAR 2012	Fragments of ridge and furrow are visible on 2012 LiDAR as extant earthworks, despite the fact they fall within a landscaped golf course.
					E/LE	NMR RAF-CPE-UK-1920 3113 13-JAN-1947 HS2 LiDAR 2012	Ridge and furrow is visible as extant earthworks on a 1947 vertical aerial photograph. Modern LiDAR shows it is now levelled.
					C	NMR RAF-540-494 3346 12-MAY-1951	Ridge and furrow is faintly visible as cropmarks on a 1951 vertical aerial photograph.
F02			MD/PM	Ridge and furrow	E	HS2 LiDAR 2012	Ridge and furrow is visible beneath a small area of woodland as faint earthworks on 2012 LiDAR. The OS map indicates that this area was later re-used for allotments, probably set-out along the old ridges.
F03			MD/PM	Ridge and furrow	E	HS2 LiDAR 2012	Medieval or post-medieval ridge and furrow is visible as earthworks. It continues beyond the project boundary but this is not included in the mapping.
F04			MD/PM	Ridge and furrow	E	HS2 LiDAR 2012	Two areas of ridge and furrow are visible on LiDAR as extant earthworks within a landscaped golf course. Both are likely to continue beyond the edge of the project boundary, but LiDAR coverage stops there.
F05			MD/PM	Ridge and furrow	E	NMR EA-AF-97C-663 4442 03-MAR-1997 HS2 LiDAR 2012	Fragments of ridge and furrow are visible on 2012 LiDAR as extant earthworks, despite the fact they fall within a landscaped golf course.
					E	HS2 LiDAR 2012	Fragments of medieval or post-medieval ridge and furrow are visible as earthworks on LiDAR. In this area the ridge and furrow is cut at right-angles to the plough direction by earthworks relating probably to modern landscaping.
					E/LE	NMR EA-AF-97C-663 4442 03-MAR-1997 HS2 LiDAR 2012	Ridge and furrow faintly extant on a 1997 vertical aerial photograph appears to have been levelled by the time of the 2012 LiDAR.
					E/LE	NMR RAF-CPE-UK-1920 3113 13-JAN-1947 HS2 LiDAR 2012	Ridge and furrow which is visible on a 1947 vertical aerial photograph as faintly extant earthworks appears to have been levelled by the time of the 2012 LiDAR.
F06			MD/PM	Ridge and furrow	C	NMR RAF-AF-97C-663 4434 03-MAR-1997	A fragment of medieval or post-medieval ridge and furrow is visible as a cropmark on NMR RAF-AF-97C-663 4434 03-MAR-1997. The cropmark is visible at the edge of the photo and it may extend further into the field.
F07			MD/PM	Ridge and furrow	E	HS2 LiDAR 2012	An area of ridge and furrow is visible on the western side of Breakspear Road South as extant earthworks on 2012 LiDAR.
F08			MD/PM	Ridge and furrow	C	PGA TQ0787 14-JUL-2003	Ridge and furrow is faintly visible as cropmarks in the field between Breakspear Road South and the river, just to the north of Copthall Road West.
F09			MD/PM	Field boundary Boundary bank	E	HS2 LiDAR 2012	Linear banks are visible on LiDAR as extant earthworks. Possible former field boundaries. Not recorded on historic OS maps dating from the 19th century onwards.
F10			MD/PM	Field boundary Boundary bank	E	HS2 LiDAR 2012	Linear banks are visible on LiDAR as extant earthworks. Possible former field boundaries. Not recorded on historic OS maps dating from the 19th century onwards.
F11	394949	050498/00/00	MD/PM	Moat	E	HS2 LiDAR 2012	Moat and outer bank clearly visible on LiDAR. Only three sides remain (north-east not visible). Scheduled ancient monument (number 1005555). Extends beyond

Aerial survey ID	National record of the historic environment reference	HER reference	Period	Type	Evidence	Source	Description
							scheduling polygon. Outer bank on southern side not on modern OS map.
				Moat Bank	E	HS2 LiDAR 2012	Moat and outer bank clearly visible on LiDAR. Only three sides remain (north-east not visible). Scheduled ancient monument (number 1005555). Extends beyond scheduling polygon. Outer bank on southern side not on modern OS map.
F12			RO/MD/UN	Ditched enclosure Rectilinear enclosure	E	HS2 LiDAR 2012	Ditch forming a partial rectilinear enclosure, visible as a faint earthwork on LiDAR. South-west side of the possible enclosure ditch is cut by the existing field boundary.
F13			MD/PM	Ridge and furrow	E /LE	NMR EA-AF-97C-663 4440 03-MAR-1997 HS2 LiDAR 2012	Ridge and furrow faintly visible as extant earthworks across a possible cricket pitch on a 1997 vertical aerial photograph appears to have been levelled by the time of the 2012 LiDAR.
					C	NMR EA-AF-97C-663 4440 03-MAR-1997	Ridge and furrow is visible as cropmarks across two marked-up sports pitches on a 1997 vertical aerial photograph.
F14			MD/PM	Ridge and furrow	E	HS2 LiDAR 2012	A small area of ridge and furrow is visible as earthworks on LiDAR. It is likely to extend beyond the project boundary (and therefore beyond LiDAR coverage).
F15			MD/PM	Ridge and furrow	E	NMR RAF-CPE-UK-1920 3112 13-JAN-1947 HS2 LiDAR 2012	Faintly extant ridge and furrow was just visible on LiDAR, and was confirmed by 1947 aerial photograph.
					E/LE	NMR RAF-CPE-UK-1920 3112 13-JAN-1947 HS2 LiDAR 2012	Medieval or post-medieval ridge and furrow was visible across the whole field as earthworks in a 1947 aerial photograph, now levelled.
F16			MD/PM/UN	Terraced ground Natural feature	E	NMR RAF-CPE-UK-1920 3111 13-JAN-1947 HS2 LiDAR 2012	Two angular banks visible on north-west facing hillside. May be natural slumping of the hillside, but due to unusual shape and defined tops to the banks other interpretations cannot be discounted.

2.6 Results: interpretation

- 2.6.1 Sixteen possible archaeological features were recorded from the remote sensed imagery that was surveyed as part of this project.
- 2.6.2 The survey area contains one scheduled monument: a medieval moated site at Brackenbury Farm (RUL002) (feature F11;). Although (as noted in Section 2.2.17 of this report) it is not generally within the scope of this project to map features already recorded on OS maps, the highly-detailed 2012 LiDAR showed the site extending over a greater area than recorded on the maps. The additional element of the site visible on LiDAR appears to be a continuation of the outer bank around the southern extent of the moat. This may be the result of later landscaping, rather than an original feature. It is not possible to determine the origin of this bank from remote sensed sources alone, as even on the earliest archive aerial photographs the site is masked by mature trees. The full extent of the site falls partly outside of the scheduling polygon defined by English Heritage.
- 2.6.3 A possible partial ditched enclosure is visible as a slight earthwork on LiDAR (feature F12). Due to its proximity to the adjacent medieval moated site (feature F11), it is possible that the partial ditched enclosure is an associated feature. However, the form of the enclosure is not characteristically diagnostic of any specific date range or purpose.
- 2.6.4 The survey recorded evidence of ridge and furrow cultivation which is likely to date from the medieval or early post-medieval periods. Unusually, the majority of the ridge and furrow identified in the study area survives as extant earthworks even though it falls predominately within a landscaped golf course (features F01, F03–05) (RUL016).
- 2.6.5 The 2012 aerial orthophotography shows the allotment gardens lying between Oak Avenue and the rear of the houses on The Greenway as a fairly well-established area of woodland. The 2012 LiDAR, however, reveals that extant ridge and furrow survives beneath the trees (RUL016) (feature F02). It is not uncommon to find allotments set out along the ridges of medieval cultivation.
- 2.6.6 Two linear banks (features F09 and F10) may represent former field boundaries. No such field boundaries are visible on the 19th and 20th century cartographic sources, indicating that they are probably medieval or earlier post-medieval in date.
- 2.6.7 Two further banks (feature F16) on a hillside may be archaeological in nature, although it is also possible that they represent natural slumping down the hillside.

2.7 SignificanceConclusions

- 2.7.1 Sixteen individual or grouped possible archaeological features were identified from the remote sensed imagery, only one of which had previously been recorded by either the HER or the national record of the historic environment (Brackenbury Farm moated site).
- 2.7.2 The remote sensing survey has increased the known detail and extent of Brackenbury Farm moated site, which is a scheduled monument. Possible elements of this medieval moated site have been shown to extend beyond the edge of the polygon defining the scheduled area.
- 2.7.3 The survey identified a possible ditched enclosure to the west of Brackenbury Farm. The nature and date of this feature is currently unknown, but it may relate to the moated site.

2.8 References

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Table 5: English Heritage vertical aerial photographs consulted

English Heritage library number	Original sortie number	Original frame number	Date taken
188	RAF/3G/TUD/UK/43	5323	29 January 1946
228	RAF/3G/TUD/UK/229	5147	10 September 1946
228	RAF/3G/TUD/UK/229	5148	10 September 1946
228	RAF/3G/TUD/UK/229	5149	10 September 1946
228	RAF/3G/TUD/UK/229	5150	10 September 1946
228	RAF/3G/TUD/UK/229	5155	10 September 1946
228	RAF/3G/TUD/UK/229	5156	10 September 1946
228	RAF/3G/TUD/UK/229	5157	10 September 1946
228	RAF/3G/TUD/UK/229	5158	10 September 1946
535	RAF/CPE/UK/1920	3111	13 January 1947
535	RAF/CPE/UK/1920	3112	13 January 1947
535	RAF/CPE/UK/1920	3113	13 January 1947
535	RAF/CPE/UK/1920	3114	13 January 1947
588	RAF/CPE/UK/1965	3026	10 April 1947
588	RAF/CPE/UK/1965	3027	10 April 1947
588	RAF/CPE/UK/1965	3041	10 April 1947
588	RAF/CPE/UK/1965	3042	10 April 1947

English Heritage library number	Original sortie number	Original frame number	Date taken
588	RAF/CPE/UK/1965	3043	10 April 1947
588	RAF/CPE/UK/1965	3044	10 April 1947
588	RAF/CPE/UK/1965	3045	10 April 1947
588	RAF/CPE/UK/1965	3089	10 April 1947
588	RAF/CPE/UK/1965	3090	10 April 1947
588	RAF/CPE/UK/1965	3091	10 April 1947
588	RAF/CPE/UK/1965	4030	10 April 1947
588	RAF/CPE/UK/1965	4031	10 April 1947
588	RAF/CPE/UK/1965	4091	10 April 1947
623	RAF/CPE/UK/2046	5236	29 April 1947
623	RAF/CPE/UK/2046	5237	29 April 1947
623	RAF/CPE/UK/2046	5238	29 April 1947
623	RAF/CPE/UK/2046	5239	29 April 1947
623	RAF/CPE/UK/2046	5337	29 April 1947
623	RAF/CPE/UK/2046	5338	29 April 1947
623	RAF/CPE/UK/2046	5339	29 April 1947
623	RAF/CPE/UK/2046	5340	29 April 1947
623	RAF/CPE/UK/2046	5341	29 April 1947
623	RAF/CPE/UK/2046	5342	29 April 1947
623	RAF/CPE/UK/2046	5343	29 April 1947
623	RAF/CPE/UK/2046	5344	29 April 1947
644	RAF/CPE/UK/2093	5001	26 May 1947
644	RAF/CPE/UK/2093	5002	26 May 1947
735	RAF/CPE/UK/2239	5364	18 August 1947
735	RAF/CPE/UK/2239	5365	18 August 1947
735	RAF/CPE/UK/2239	5366	18 August 1947
1176	RAF/540/494	3210	12 May 1951
1176	RAF/540/494	3211	12 May 1951
1176	RAF/540/494	3212	12 May 1951
1176	RAF/540/494	3213	12 May 1951
1176	RAF/540/494	3345	12 May 1951
1176	RAF/540/494	3346	12 May 1951

English Heritage library number	Original sortie number	Original frame number	Date taken
1176	RAF/540/494	4209	12 May 1951
1176	RAF/540/494	4210	12 May 1951
1176	RAF/540/494	4211	12 May 1951
1176	RAF/540/494	4212	12 May 1951
1178	RAF/540/526	3116	06 June 1951
1178	RAF/540/526	3117	06 June 1951
1178	RAF/540/526	3118	06 June 1951
1453	RAF/82/777	666	05 May 1953
1453	RAF/82/777	667	05 May 1953
1453	RAF/82/777	668	05 May 1953
1453	RAF/82/777	669	05 May 1953
1453	RAF/82/777	670	05 May 1953
1453	RAF/82/777	671	05 May 1953
1453	RAF/82/777	672	05 May 1953
1453	RAF/82/777	692	05 May 1953
1453	RAF/82/777	693	05 May 1953
1453	RAF/82/777	694	05 May 1953
1453	RAF/82/777	695	05 May 1953
1453	RAF/82/777	696	05 May 1953
1453	RAF/82/777	697	05 May 1953
1453	RAF/82/777	698	05 May 1953
1518	RAF/540/1285	20	13 April 1954
1518	RAF/540/1285	21	13 April 1954
1518	RAF/540/1285	22	13 April 1954
1520	RAF/82/1006	134	31 August 1954
1520	RAF/82/1006	135	31 August 1954
1520	RAF/82/1006	136	31 August 1954
1635	RAF/82/1149	132	14 April 1955
1635	RAF/82/1149	133	14 April 1955
1652	RAF/82/1190	279	11 May 1955
1652	RAF/82/1190	280	11 May 1955
1652	RAF/82/1190	281	11 May 1955

English Heritage library number	Original sortie number	Original frame number	Date taken
1652	RAF/82/1190	282	11 May 1955
2078	RAF/543/1059	142	13 September 1960
2078	RAF/543/1059	143	13 September 1960
2078	RAF/543/1059	144	13 September 1960
2078	RAF/543/1059	145	13 September 1960
2078	RAF/543/1059	146	13 September 1960
2078	RAF/543/1059	147	13 September 1960
2078	RAF/543/1059	148	13 September 1960
2078	RAF/543/1059	407	13 September 1960
2078	RAF/543/1059	408	13 September 1960
2078	RAF/543/1059	409	13 September 1960
2078	RAF/543/1059	410	13 September 1960
2078	RAF/543/1059	411	13 September 1960
2078	RAF/543/1059	412	13 September 1960
2204	RAF/58/4646	497	28 August 1961
2204	RAF/58/4646	498	28 August 1961
2204	RAF/58/4646	499	28 August 1961
2273	FSL/6641/3	3476	23 July 1966
2273	FSL/6641/3	3600	23 July 1966
2273	FSL/6641/3	3601	23 July 1966
2273	FSL/6641/3	3602	23 July 1966
2273	FSL/6641/3	3603	23 July 1966
2273	FSL/6641/3	3604	23 July 1966
2352	RAF/58/1687	54	17 March 1955
2352	RAF/58/1687	55	17 March 1955
2352	RAF/58/1687	55	17 March 1955
2352	RAF/58/1687	56	17 March 1955
2354	RAF/58/1671	104	03 March 1955
2354	RAF/58/1671	105	03 March 1955
2354	RAF/58/1671	152	03 March 1955
2354	RAF/58/1671	153	03 March 1955
2354	RAF/58/1671	154	03 March 1955

English Heritage library number	Original sortie number	Original frame number	Date taken
2354	RAF/58/1671	155	03 March 1955
3341	RAF/58/630	5062	17 April 1951
5908	MAL/71063	193	20 May 1971
5908	MAL/71063	194	20 May 1971
5909	MAL/71064	8	20 May 1971
5909	MAL/71064	9	20 May 1971
5909	MAL/71064	10	20 May 1971
5909	MAL/71064	11	20 May 1971
5909	MAL/71064	12	20 May 1971
5910	MAL/71065	118	20 May 1971
5910	MAL/71065	119	20 May 1971
5910	MAL/71065	120	20 May 1971
5910	MAL/71065	121	20 May 1971
5910	MAL/71065	122	20 May 1971
5910	MAL/71065	123	20 May 1971
5910	MAL/71065	124	20 May 1971
5910	MAL/71065	125	20 May 1971
5932	MAL/71148	95	05 October 1971
5932	MAL/71148	96	05 October 1971
5932	MAL/71148	97	05 October 1971
5932	MAL/71148	98	05 October 1971
5932	MAL/71148	99	05 October 1971
5932	MAL/71148	100	05 October 1971
5932	MAL/71148	101	05 October 1971
7531	MAL/78018	111	28 May 1978
8279	RAF/HLA/478	6018	13 April 1942
8346	RAF/HLA/036	23	12 July 1940
8346	RAF/HLA/036	29	12 July 1940
8346	RAF/HLA/036	30	12 July 1940
8346	RAF/HLA/036	31	12 July 1940
8357	RAF/HLA/054	28	11 August 1940
8357	RAF/HLA/054	29	11 August 1940

English Heritage library number	Original sortie number	Original frame number	Date taken
8357	RAF/HLA/054	30	11 August 1940
8357	RAF/HLA/054	31	11 August 1940
8357	RAF/HLA/054	32	11 August 1940
9520	OS/66252	75	17 September 1966
9521	OS/67323	452	20 August 1967
9521	OS/67323	453	20 August 1967
9521	OS/67323	454	20 August 1967
9521	OS/67323	458	20 August 1967
9521	OS/67323	459	20 August 1967
9521	OS/67323	474	20 August 1967
9521	OS/67323	489	20 August 1967
9521	OS/67323	490	20 August 1967
9521	OS/67323	491	20 August 1967
9521	OS/67323	494	20 August 1967
9521	OS/67323	495	20 August 1967
9521	OS/67323	496	20 August 1967
9521	OS/67323	497	20 August 1967
9521	OS/67323	498	20 August 1967
13651	OS/90025	396	18 March 1990
13651	OS/90025	397	18 March 1990
13651	OS/90025	439	18 March 1990
13651	OS/90025	440	18 March 1990
15236	RAF/58/1276	54	14 September 1953
15236	RAF/58/1276	54	14 September 1953
15408	OS/98138	87	08 August 1998
15408	OS/98138	88	08 August 1998
15408	OS/98138	89	08 August 1998
15408	OS/98138	94	08 August 1998
15408	OS/98138	95	08 August 1998
15408	OS/98138	96	08 August 1998
15408	OS/98138	200	08 August 1998
15408	OS/98138	201	08 August 1998

English Heritage library number	Original sortie number	Original frame number	Date taken
15408	OS/98138	202	08 August 1998
15408	OS/98138	203	08 August 1998
15408	OS/98138	276	08 August 1998
15408	OS/98138	277	08 August 1998
15408	OS/98138	278	08 August 1998
20152	OS/55T23	34	16 July 1955
20152	OS/55T23	35	16 July 1955
20152	OS/55T23	36	16 July 1955
20152	OS/55T23	37	16 July 1955
20152	OS/55T23	38	16 July 1955
20152	OS/55T23	39	16 July 1955
20152	OS/55T23	40	16 July 1955
20152	OS/55T23	41	16 July 1955
20152	OS/55T23	42	16 July 1955
20152	OS/55T23	43	16 July 1955
20152	OS/55T23	44	16 July 1955
20152	OS/55T23	45	16 July 1955
20152	OS/55T23	46	16 July 1955
20152	OS/55T23	47	16 July 1955
20152	OS/55T23	48	16 July 1955
20152	OS/55T23	49	16 July 1955
20152	OS/55T23	116	16 July 1955
20152	OS/55T23	117	16 July 1955
20152	OS/55T23	118	16 July 1955
20152	OS/55T23	119	16 July 1955
20152	OS/55T23	120	16 July 1955
20152	OS/55T23	121	16 July 1955
20152	OS/55T23	122	16 July 1955
20152	OS/55T23	123	16 July 1955
20152	OS/55T23	124	16 July 1955
20152	OS/55T23	125	16 July 1955
40161	EA/AF/97C/663	4337	03 March 1997

English Heritage library number	Original sortie number	Original frame number	Date taken
40161	EA/AF/97C/663	4338	03 March 1997
40161	EA/AF/97C/663	4433	03 March 1997
40161	EA/AF/97C/663	4434	03 March 1997
40161	EA/AF/97C/663	4440	03 March 1997
40161	EA/AF/97C/663	4441	03 March 1997
40161	EA/AF/97C/663	4442	03 March 1997
40161	EA/AF/97C/663	4443	03 March 1997
40161	EA/AF/97C/663	4444	03 March 1997
40161	EA/AF/97C/663	4445	03 March 1997
40161	EA/AF/97C/663	4495	03 March 1997



Table 6: English Heritage oblique aerial photographs consulted

English Heritage photo reference	Film number	Original frame number	Date taken
TQ 0587 / 01	AFL 60715	/ EPW034665	16 October 1930
TQ 0686 / 01	NMR 24779	/ 27	18 October 2007
TQ 0686 / 02	NMR 24779	/ 29	18 October 2007
TQ 0686 / 03	AFL 60715	/ EPW034664	18 October 2007
TQ 0687 / 01	NMR 24779	/ 30	18 October 2007
TQ 0687 / 02	NMR 24779	/ 32	18 October 2007
TQ 0687 / 03	NMR 24779	/ 33	18 October 2007
TQ 0687 / 04	NMR 24779	/ 36	18 October 2007
TQ 0687 / 05	NMR 24779	/ 41	18 October 2007
TQ 0687 / 06	NMR 24779	/ 34	18 October 2007
TQ 0688 / 05	NMR 24779	/ 06	18 October 2007
TQ 0688 / 08	NMR 24779	/ 09	18 October 2007
TQ 0688 / 19	NMR 26459	/ 25	19 August 2009
TQ 0688 / 20	NMR 26459	/ 26	19 August 2009
TQ 0786 / 01	NMR 24779	/ 38	18 October 2007
TQ 0786 / 02	NMR 26629	/ 03	08 April 2010
TQ 0786 / 03	NMR 26629	/ 04	08 April 2010
TQ 0786 / 04	NMR 26629	/ 05	08 April 2010

English Heritage photo reference	Film number	Original frame number	Date taken
TQ 0786 / 05	NMR 26629	/ 06	08 April 2010
TQ 0786 / 06	NMR 26629	/ 08	08 April 2010
TQ 0786 / 07	NMR 26629	/ 09	08 April 2010
TQ 0786 / 08	AFL 60833	/ EPW041113	May 1933
TQ 0786 / 09	AFL 60833	/ EPW041114	May 1933
TQ 0787 / 01	NMR 24779	/ 28	18 October 2007
TQ 0787 / 02	NMR 24779	/ 31	18 October 2007
TQ 0787 / 04	NMR 24779	/ 35	18 October 2007
TQ 0787 / 05	NMR 24779	/ 37	18 October 2007
TQ 0787 / 06	NMR 24779	/ 39	18 October 2007
TQ 0787 / 07	NMR 24779	/ 40	18 October 2007
TQ 0787 / 08	NMR 24779	/ 42	18 October 2007
TQ 0787 / 09	NMR 24779	/ 43	18 October 2007
TQ 0787 / 10	NMR 26629	/ 01	08 April 2010
TQ 0787 / 11	NMR 26629	/ 02	08 April 2010
TQ 0787 / 12	NMR 26629	/ 07	08 April 2010
TQ 0886 / 01	AFL 60019	/ EPW001564	June 1920
TQ 0886 / 02	AFL 60855	/ EPW044191	May 1934
TQ 0886 / 03	AFL 60855	/ EPW044192	May 1934
TQ 0886 / 04	AFL 60855	/ EPW044502	May 1934

2.9 Figures

CH004.06.01 Remote sensing survey interpretation 1:5,000

CH004.06.02 Remote sensing survey interpretation 1:5,000

3 Geophysical surveys

3.1 Copthall Farm

Introduction

3.1.1 An archaeological geophysical survey was undertaken in CFA6 on a site located to the west of Ruislip, Greater London (Figure CH004.06.03).The purpose of the survey was to locate and characterise any anomalies of possible archaeological interest within the site.

The site

- 3.1.2 The survey area is located at national grid reference TQ 0640 8700, and lies to the immediate east of Harvil Road (Figure CH004.06.04). It comprises one rectangular field of approximately 6.6ha in extent. The field was under pasture of varying height at the time of the survey. A footpath runs east/west across the field.
- 3.1.3 The survey area stands at an elevation of between 48m and 62m above Ordnance Datum on a slight, south-eastward-facing slope. The geology of the site consists of London Clay Formation.¹⁷

Summary archaeological/historic background

- 3.1.4 The site is located within an area containing extensive evidence of medieval occupation. The site lies to the west of Brackenbury House Farm, a scheduled moat, house and barn complex (scheduled monument number 100555) thought to have been part of a 16th-century residence.¹⁸ A further medieval moated farmstead lies within the bends of the River Pinn, some 320m to the south-east of Brakenbury House Farm.¹⁹
- 3.1.5 The sites of a number of medieval farmhouses²⁰ and a medieval tile kiln²¹ have been identified along the route of Brakespear Road South.

Methodology

- 3.1.6 A detailed magnetometer survey of the site was undertaken on 24–26 June 2013.
- 3.1.7 An independent network of 30m grid squares was established within each of the fields to be surveyed. Each grid was laid out with a tape measure and optical square and was tied in to the Ordnance Survey National Grid by recording the baseline location with a Leica Systems 1200 dGPS (Figure CH004.06.05).
- 3.1.8 The survey data was collected with Bartington Grad 601-2, twin sensor array, vertical component fluxgate gradiometers. These are standard instruments for archaeological survey, capable of resolving magnetic field strength to a precision of 0.1 nanoTesla.²² The instruments were carried at a brisk but steady pace through each grid square, collecting data along 1m-spaced traverse lines. Measurements were automatically triggered every 0.25m along the traverses, giving a total of 3,600 measurements per square.
- 3.1.9 The survey data was viewed and processed using Geoplot 3.00v software. Striping, caused by slight mismatches in sensor balance, was removed using the 'Zero Mean Traverse' function and destaggering of the data was performed as necessary. Greyscale bitmaps of the data (scale +/- 4 nanoTesla, black/white) were exported and were georectified using the RasTools function in MapInfo v8. XY trace plots of the data were not produced, as they were not considered to be appropriate in this instance.

Limitations

- 3.1.10 Magnetometer survey is a useful and widely-deployed form of archaeological prospection, but it suffers from several well-recognised limitations:²³
- it is a shallow-seeking technique, and is generally unable to detect archaeology beneath more than 1m of overburden;
 - small and ephemeral remains (e.g. postholes, beam slots, cremation burials) are rarely detected, especially at the standard survey resolution of 1m x 0.25m;
 - stone building remains can only be detected under particularly favourable conditions;
 - the technique can be ineffective over certain geological substrates which do not support the formation of well-developed contrasts in soil magnetism. It may also be hindered by highly magnetic geologies (e.g. ironstone, igneous dykes); and
 - certain modern structures (e.g. fences, steel-framed buildings, water pipes) produce intense magnetic halos which can obscure the much weaker anomalies arising from archaeological remains.

Assumptions

- 3.1.11 There are no methodological assumptions applicable to the conduct of this fieldwork. However, readers should be aware that the interpretation of archaeological geophysical data is a qualitative process, based on a combination of theoretical principles and past experience, and that absolute confidence is not always achievable.

Results: description

- 3.1.12 Please see Figures CH004.06.06 and CH004.06.07.
- 3.1.13 The survey recorded four positive linear anomalies:
- an anomaly running through the centre of the field on a north-north-west/south-south-eastern alignment;
 - a north-north-east/south-south-west-aligned anomaly in the south-western part of the field, measuring approximately 100m in length;
 - an anomaly running along the eastern side of the field, aligned parallel with the existing hedge line; this anomaly is slightly curved, mirroring the hedge line's contour; and
 - a north-west/south-east-aligned anomaly in the south-eastern corner of the field, measuring some 30m in length.
- 3.1.14 Dense scatters of small positive and negative anomalies have been identified in the north-western and south-eastern corners of the field. In the north-western corner, the anomalies are concentrated along the hedge line in a linear band measuring approximately 100m in length and 30m in width; in the south-eastern corner the anomalies are restricted to a square measuring some 20m across.
- 3.1.15 A number of small dipolar anomalies are also present within the data. Four of these anomalies are located along the line of the footpath that runs east/west across the survey area. A slightly

¹⁷ British Geological Survey; GeoIndex; <http://mapapps2.bgs.ac.uk/geoindex/home.html>; Accessed: 29 July 2013.

¹⁸ English Heritage National Monuments Record No. TQ 08 NE 22.

¹⁹ English Heritage National Monuments Record No. MLO 4552.

²⁰ English Heritage National Monuments Record Nos. EH 050498; EH 210344; EH 210345; EH 21034501.

²¹ English Heritage National Monuments Record No. EH 052990.

²² Bartington, G. and Chapman, C., (2003), *A high-stability fluxgate magnetic gradiometer for shallow geophysical survey applications*, Archaeological Prospection, Vol. 11, Pgs. 19-34.

²³ English Heritage (2008), *Geophysical survey in archaeological field evaluation*, Pgs. 13–18.

larger positive anomaly has been identified on the eastern side of the field, where the path crosses the hedge line.

Results: interpretation

- 3.1.16 The positive linear anomaly running parallel to the eastern field boundary is likely to represent a former limit of cultivation in place before the field was turned over to pasture, although it may also represent a land drain. The three other positive linear anomalies probably indicate the presence of land drains.
- 3.1.17 The positive and negative anomalies in the north-western corner of the site indicate a dense scatter of small ferrous objects within the soil. This is likely to be waste thrown into the field from the adjacent farm. In contrast, the scatter of positive and negative anomalies in the south-eastern corner of the field is the result of compacted hardcore in the gateway.
- 3.1.18 The small dipolar anomalies which occur across the survey area are diagnostic of ferrous objects. Those along the line of the path are probably discarded litter; the remainder are of probable agricultural origin. A sign-post on the eastern side of the field is responsible for the larger dipolar anomaly.

Significance

- 3.1.19 The geophysical survey did not record any evidence for below-ground archaeological remains at the site.

Conclusions

- 3.1.20 The survey did not identify any archaeological anomalies, although it did identify anomalies of agricultural origin.

3.2 References

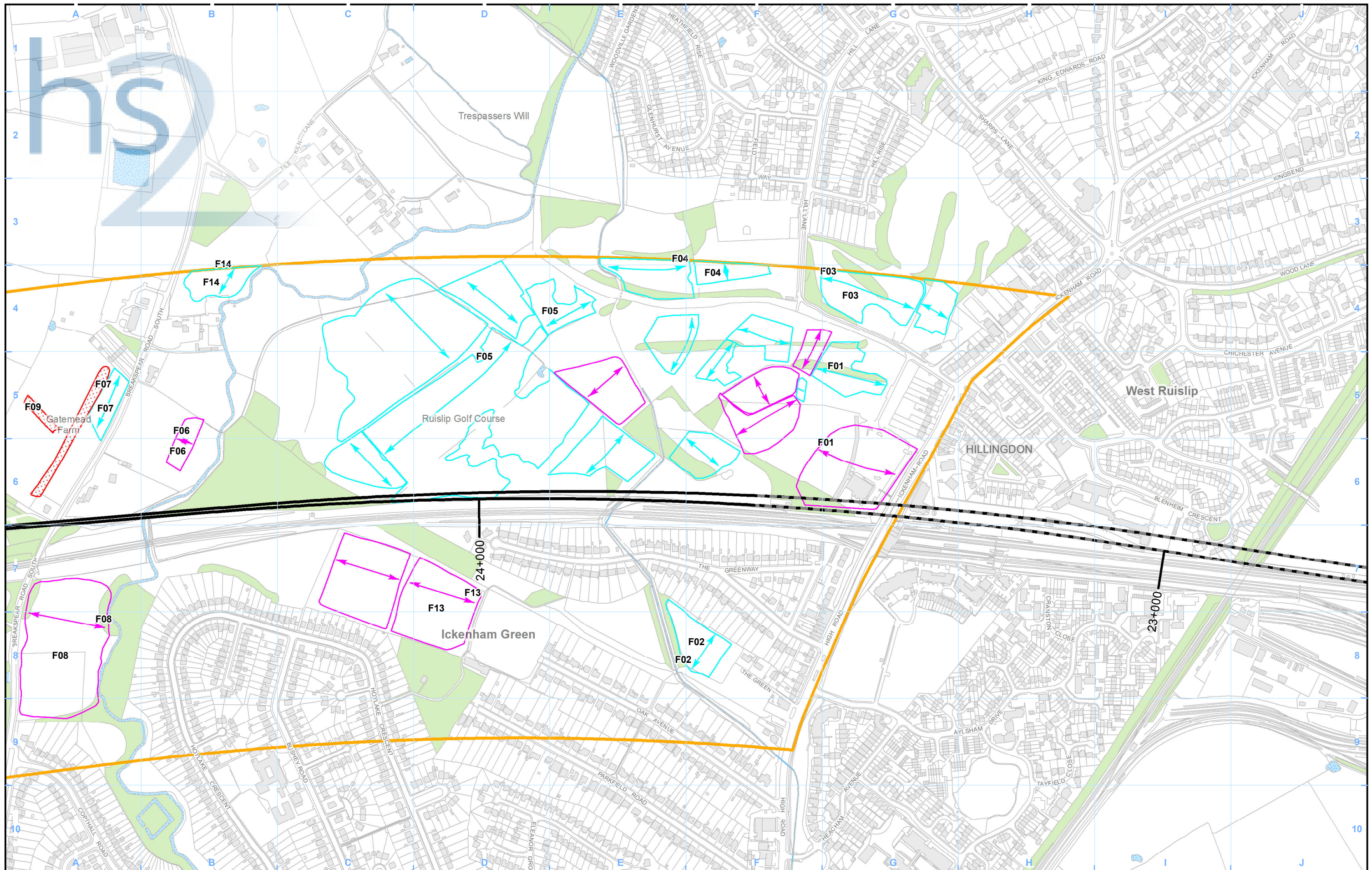
Bartington, G. and Chapman, C., (2003), *A high-stability fluxgate magnetic gradiometer for shallow geophysical survey applications*, Archaeological Prospection, Vol. 11, Pgs. 19–34.

British Geological Survey; GeoIndex; <http://mapapps2.bgs.ac.uk/geoindex/home.html>; Accessed: 29 July 2013.

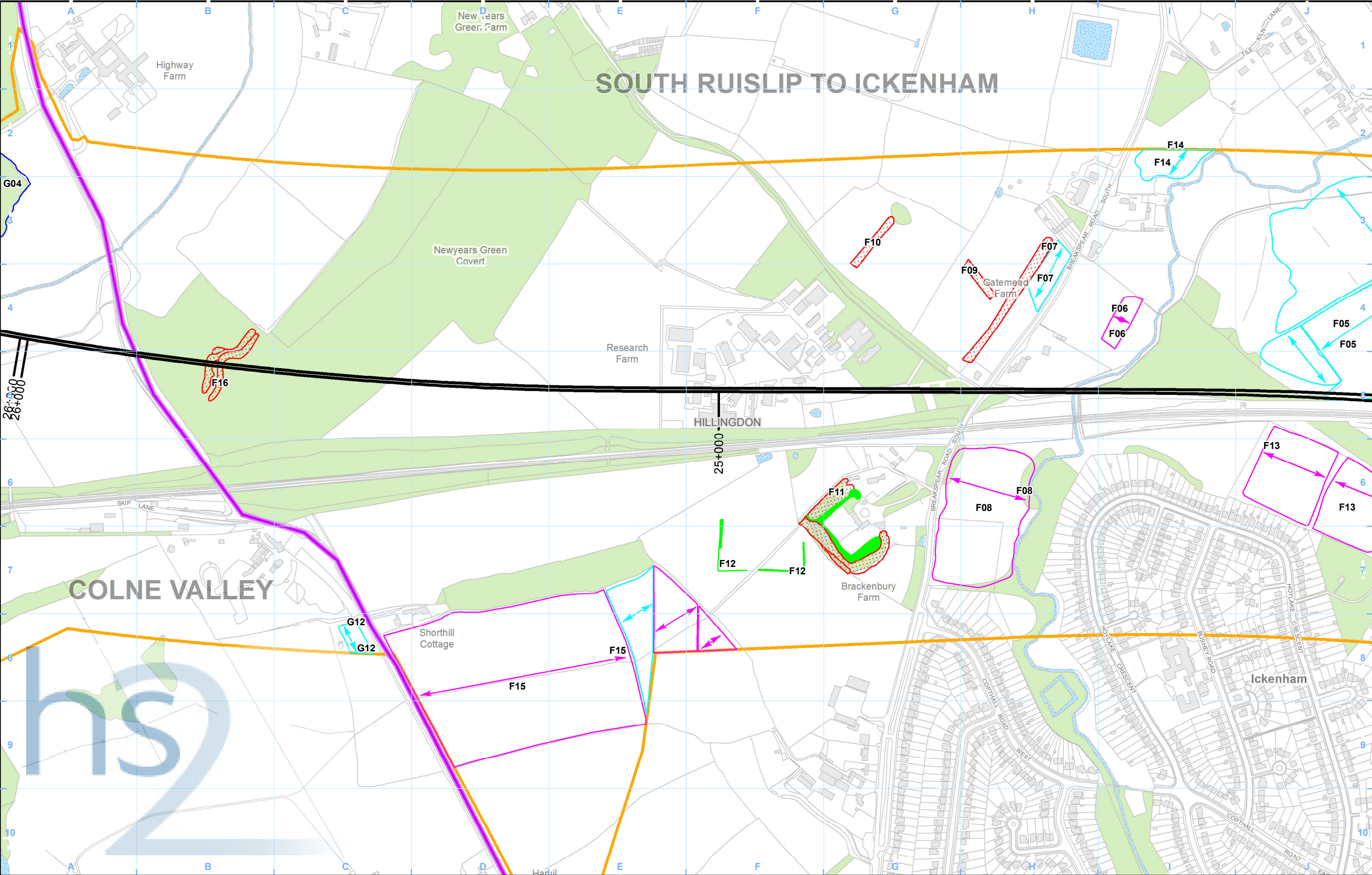
English Heritage, (2008), Geophysical survey in archaeological field evaluation.

3.3 Figures

CH004.06.03	Site location diagram	1:50,000
CH004.06.04	Location of survey area	1:20,000
CH004.06.05	Tie-in information	1:2,500
CH004.06.06	Magnetometer data plot	1:2,500
CH004.06.07	Interpretation plot	1:2,500



Legend Route in tunnel Route on surface Community forum boundary District/Borough boundary Watercourse Water body Woodland	Remote sensing survey boundary Archaeological features Bank Ditch Extant ridge and furrow direction Levelled ridge and furrow direction Structure T-Hachure	Extent of Area Bank Ditch Extant ridge and furrow outline Levelled ridge and furrow outline Structure Large cut feature	Location Map 	Map Number CH004.06.01 Map Name Remote Sensing Survey Interpretation Community Forum Area CFA6: South Ruislip to Ickenham	 ETM accept no responsibility for any circumstances, which arise from the reproduction of this map after alteration, amendment or abbreviation or if it is issued in part or issued incomplete in any way. Scale at A3: 1:5,000 © Crown copyright and database rights 2013. Ordnance Survey Licence Number 100049190. Doc Number: C251-ETM-EV-MAP-010-000955-P02.00 Date: 03/09/13
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Legend

Route in tunnel

Route on surface

Community forum boundary

District/Borough boundary

Watercourse

Water body

Woodland

Remote sensing survey boundary

Archaeological features

Bank

Ditch

Extant ridge and furrow direction

Levelled ridge and furrow direction

Structure

T-Hachure

Extent of Area

Bank

Ditch

Extant ridge and furrow outline

Levelled ridge and furrow outline

Structure

Large cut feature

Location Map

Map Number

CH004.06.02

Map Name

Remote Sensing Survey Interpretation

Community Forum Area CFA6:
South Ruislip to Ickenham

ETM

TEPPL

MA

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0

50

100

150

200

Metres

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